# Extended Air Defense Testbed
## The Utmost Simulation Tool

The Extended Air Defense Testbed (EADTB) is a robust analytic simulation for examining theater air and missile defense (TAMD) as well as national missile defense (NMD) issues in a Family of Systems (FoS) context. The EADTB supports the warfighter by modeling from the battery/fire-unit level through theater up to space-level scope with a high degree of flexibility in choice of levels of detail and aggregation. An object-based simulation architecture supports this breadth of applicability by allowing the user to develop system models called specific system representations (SSRs). The user can then place numbers of these SSRs on a host gameboard that contains the terrain and weather models without a requirement for rewrite of other existing system models or modification of the supporting architecture.

By placing model-development power in the hands of users, the EADTB has stimulated the ongoing development of a range of system models by system proponent agencies across all three services. These agencies continue to certify their EADTB models for a documented range of uses and contribute them to an SSR library, which is accessible to other EADTB users. The EADTB will thus become the first simulation to offer access to a library of system models contributed and certified by a diverse group of joint-service and, potentially, international sources.

## How EADTB is Different

The combination of an object-based framework, flexibility in the level of model detail, promotion of the sharing of certified models, and DIS/HLA capability set EADTB apart for other simulations:

• EADTB partitions perception from truth and propagates perception, whereas many simulations propagate truth and add errors to represent perception.

• EADTB has an extensive independent verification and validation (IV&V) legacy for library-resident SSRs and for the common model set, which provides the "building blocks" for user construction of SSRs.

• EADTB allows users to build their own SSRs, as well as use existing SSRs from the master library. In most other simulations, the user can only set flags or modify numerical data inputs to alter the behavior of built-in system representations.

• EADTB offers a high degree of flexibility in defining the detail of SSRs, communications networks, environment models, and the scope of the scenario. Scope can include theater level for TAMD, global level for NMD, or fire-unit level for one-on-many simulations.

• EADTB offers the capabilities to model C4ISR at a very high level of detail.

• EADTB offers a robust suite of on-line tools for visualization and numerical diagnostics.

• EADTB is the only simulation available today that can model the Joint Data Network (JDN) from creation of the messages through transmission on the modeled JTIDS net to receipt and interpretation of the message. This capability includes all time slot allocation and reallocation.

## How EADTB is Used

The primary application for users of EADTB is detailed analysis of system interoperability. The EADTB can assist the operational commander through rapid analysis and turnaround of contingency scenarios and by providing a "real world feel" to users. It can support the combat developer through analyses focused on procedures and operation, command structure, information management, force structure, and parametric performance. It can support material developers through analyses focused on the relationship of system design to combat value in the broad military context. In addition, the EADTB had achieved compliance with selected Distributed Interactive Simulation (DIS)/High Level Architecture (HLA) protocol data units (PDUs) and has been used almost continuously in DIS exercises linking live, virtual and constructive simulations since September 1995. The EADTB user base continues to grow and currently has 38 established sites in the United States and Europe. The EADTB is currently hosted on a Silicon Graphics Origin 2100.